USDA Foreign Agricultural Service
GAIN Report
Global Agricultural Information Network

Required Report - public distribution

Date: 3/19/2013
GAIN Report Number: BG3002

Bangladesh

Agricultural Biotechnology Annual

2013

Approved By:
Allan Mustard
Prepared By:
Sayed Sarwer Hussain

Report Highlights:
Agricultural biotechnology in Bangladesh is at a nascent stage of development with the National Biotechnology Policy, Bio-safety Guidelines, Bio-safety Framework, and several other documents adopted in the last five to six years. In spite of general political consensus in favor of biotechnology, the country still lacks administrative and regulatory systems for its adoption, which poses a barrier to export of U.S. agricultural commodities to Bangladesh. Other than a few research activities in public sector universities and institutions, investment in development of bioengineered agricultural products is virtually absent in Bangladesh. Though FAO, USAID and USDA are supporting the country's biotechnology efforts, Bangladesh needs substantial donor assistance to build capacity, develop human resources and establish a science-based regulatory system for biotechnology development.

Section I. Executive Summary:

The Bangladeshi agricultural biotechnology sector is in a nascent stage of development, but the national government seeks to move forward with the adoption of biotechnology. The National Biotechnology Policy was approved in 2006, though the draft action plan for its implementation was finalized only very recently. Bangladesh's Department of Environment (DOE) officially unveiled the "Biosafety Guidelines of Bangladesh" and the "National Biosafety Framework" in 2008. Bangladesh has signed and ratified the Cartagena Protocol on Biosafety, but a legal framework to implement the Protocol is not yet in place.

Government funding for biotechnology research in Bangladesh is minuscule and there is no organized effort for implementation of either biotech policies or scientists' recommendations. However, in 2010 the National Institute of Biotechnology (NIB) was legally authorized to act as the focal point of biotechnological research in Bangladesh.

The draft Biosafety Rules of Bangladesh 2010 are currently under further review based on comments received after it was posted in the Ministry of Environment website. In the absence of a concrete biotech regulatory system, Bangladesh officially does not allow import of bio-engineered agricultural products for commercial use, which has posed a barrier to the export of U.S. agricultural commodities to Bangladesh. The lack of effective intellectual property rights legislation is also an impediment to the development of the biotechnology sector. There is general recognition within Bangladesh's scientific and policy community that biotechnology offers a tool to provide food security to the country's growing population. Bangladesh needs bilateral and multilateral assistance in order to build capacity and to develop human resources to support and implement the biotechnology policy and guidelines, and to establish a transparent and science-based regulatory system.

Section II. Plant Biotechnology Trade and Production:

Currently Bangladesh does not produce any bioengineered crops or officially allow import of bioengineered agricultural products for commercial use.

The Technical Committee on Crop Biotechnology in the Ministry of Agriculture has approved the import of some biotech products for confined trials, which include golden rice, fruit- and shoot-borer resistant Bt eggplant, late blight resistant (LBR) potato, insect resistant Bt chickpea, and ring spot virus resistant papaya. Of these, only trials on Bt eggplant and LBR potato are progressing successfully at the Bangladesh Agricultural Research Institute (BARI). It is unofficially known that the trials of the first generation golden rice were abandoned due to perceived lack of efficacy (allegedly inadequate levels of beta carotene) and that an import permit for second generation golden rice seed for fresh trials is in the process of approval.

Bangladesh's commercial imports include wheat, rice, cotton, soybean oil, soybean meal, palm oil, and corn. Crops grown using imported seeds include maize, cotton, potato, and some winter vegetables such as cabbage, cauliflower, tomato, carrot; none of these are reported to be bio-engineered. Country's National Institute of Biotechnology (NIB) was established in 2007 as a center of excellence in biotechnology. In 2010 the institute was granted legal status as an autonomous body to act as the focal point of biotechnological research in Bangladesh. Modern laboratories with equipment and

facilities have been built to carry out state-of-the-art biotechnological research. Commercial in-vitro propagation is underway in several other public- and private sector institutions of various crops (e.g., potato, banana, orchids). Other than a few research activities in public sector universities and institutions, investment in development of bio-engineered agricultural products is virtually absent in Bangladesh.

Section III. Plant Biotechnology Policy:

Bangladesh has promulgated a National Biotechnology Policy, but has yet to establish a regulatory system for agricultural biotechnology. Therefore no biotech crop has been approved for commercial cultivation. Product Labeling Policy 2006 of Ministry of Industry stipulates that labeling must mention whether the product is produced naturally, artificially or is genetically modified.

The Ministries of Agriculture (MOA), Science and Information Technology (MOSICT), and Environment and Forest (MOEF) are jointly responsible for development of biotechnology in the country where MOSICT would lead biotechnology research and development, while the MOEF would lead biosafety efforts.

The National Task Force on Biotechnology Development (NTFBD) is the apex body of the five national-level biotechnology committees that address biodiversity, biosafety, crop biotechnology, livestock and fisheries biotechnology, and medical biotechnology. The NTFBD approved the National Biotechnology Policy in 2006 that allows bioengineering research in various sectors such as agriculture, health, industry, etc. The policy also emphasizes protecting indigenous community knowledge, collective innovations, and community rights. The National Committees on Biosafety (NCB) under the MOEF drafts and recommends policies, legislation, and measures to ensure environmentally safe management of modern biotechnological development in the country.

In 2008 MOEF notified Biosafety Guidelines of Bangladesh and National Biosafety Framework. The Biosafety Guidelines contain standards and codes of practice related to the risks associated with the environmental release of bio-engineered products. The guidelines also proposed a decision-making framework that allows experimental field testing based on: (1) the testing agency's familiarity with plant and genetic modification, (2) the ability to confine the bioengineered plant, and (3) the perceived environmental impact, should the plant escape confinement.

Bangladesh is a signatory to the Cartagena Protocol on Biosafety (CPB). It ratified the protocol in 2004, but the legislation required for implementing the Protocol has not yet been promulgated. On a par with CPB, the Bangladesh Bio-safety Guidelines state that an Advance Informed Agreement (AIA) shall be applied by the government prior to the first intentional transboundary movement of bioengineered products for intentional introduction into the country's environment.

The guidelines for safety assessment of foods derived from genetically engineered plants, consistent with Codex standards, have been approved by the NCB and are currently awaiting official notification.

The draft Biosafety Rules of Bangladesh which was posted in the Ministry of Environment website

(http://www.doe-bd.org) for public opinion is currently under further review. Bangladesh currently lacks effective legislation to protect intellectual property rights in plant varieties. The draft Plant Variety Protection Act, which includes among its goals the conservation of biodiversity and farmers' rights to seeds of indigenous crop varieties, has been waiting for approval by the government for many years.

Section IV. Plant Biotechnology Marketing Issues:

Bangladesh does not officially allow commercial import of biotech foods and agricultural products. Bangladeshi importers and consumers appear unconcerned of the possible presence of biotech traits in imported food items. The absence of a concrete biotech regulatory system could pose a barrier for the export of U.S. agricultural commodities to Bangladesh.

There is a general political consensus in favor of biotechnology in Bangladesh but with concern about the safety of biotech products, particularly in the context of preserving the country's biodiversity. Currently, Bangladesh lacks either the manpower or the infrastructure to administer adequately technical procedures for assessing biotech products. The lack of purchasing power in the farm sector due to the predominance of small and marginal farmers may also restrict the wider use of biotech seeds, which farmers believe are higher priced vis-à-vis non-biotech varieties.

Bio-engineered seeds for planting may experience difficulty gaining market acceptability, unless apprehensions about multinational seed companies are addressed and prices are reduced. Nonetheless, a large majority of scientists support biotech product development and importation but only after assessing their impacts with appropriate scientific biosafety guidelines.

Section V. Plant Biotechnology Capacity Building and Outreach:

The impact and potential of modern biotechnology are poorly understood in Bangladesh.

The FAO in 2004 prepared a document called "Assessment of Utilization and Potential of Biotechnological Advancement for Agriculture Development in Bangladesh," wherein recommendations were made for institutional and framework-building for agricultural biotechnology in Bangladesh. An international symposium on "Safety and Regulatory Issues in the Commercialization of Bio-technology Research" in 2008 recommended substantial government and private sector funding for R&D and capacity development, and appropriate incentives to local industry for commercialization of biotechnology products and services. However, no effective effort from the government or the private sector has been made so far to implement these recommendations. Government funding for biotechnology research in Bangladesh is minuscule and even that is operated by various ministries/institutions without any coordination at the national level. Most recently, in April 2012 the South Asia Biosafety Program and the Bangladesh Academy of Science jointly organized an international conference on environmental risk assessment of genetically modified plants.

USDA supports several Bangladeshi universities' agricultural biotechnology research projects and capacity building activities. Though these involve mostly academic research, the outcomes would guide

future biotech research and human resources development in Bangladesh. USDA Cochran and Borlaug Fellowship programs are also contributing to Bangladesh's capacity building in biotechnology. The USAID funded Agricultural Biotechnology Support Project (ABSP II) is providing technical assistance for trials of biotech products with BARI. ISAAA (International Service for the Acquisition of Agro-biotech Applications) and South Asia Biosafety Program (SABP) offer very limited activities in Bangladesh.

Bangladesh needs bilateral and multilateral assistance in order to build capacity and develop human resources to support and implement the biotechnology policy and guidelines; and to develop a transparent and science-based regulatory system.

Section VI. Animal Biotechnology:

No genetic engineering or cloning is underway in Bangladesh for the development of agriculturally relevant animals. Since the private sector has no capacity to engage in genetic engineering or cloning, the only future possibility is for public sector research; the Bangladesh Livestock Research Institution may in the future undertake such research efforts.

No legislation and regulations related to the development, commercial use and/or import of bio-engineered or cloned animal products are in place; however, the Biosafety Guidelines and National Biosafety Framework equally cover the bioengineered animal and fisheries products along with plant products. National Guidelines for Fish and Animal Biotechnology 2006 establish objectives to promote: (i) acquisition of knowledge of and skills in animal and fish biotechnology and (ii) development of biotechnology tools in the fields of fisheries and livestock subject to optimum safety and acceptability. However, in a Muslim majority conservative society, public perception of animal biotechnology and cloning is generally sensitive.

Section VII. Author Defined:

"Biosafety Guidelines" are available at www.doe-bd.org/biosafety_guidelines.html and the National Biosafety Framework at http://www.doe-bd.org/NationalBiosafetyFrameworkBD.pdf

The Draft Biosafety Rules of Bangladesh 2010 are available at: http://www.doe-bd.org/BiosafetyRules2010BangladeshDraft.pdf